
MicroRNA regulation of cardiovascular development.

Journal: Circ Res

Publication Year: 2009

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PubMed link: 19325160

Funding Grants: microRNA Regulation of Cardiomyocyte Differentiation from Human Embryonic Stem Cells

Public Summary:

Scientific Abstract:

The transcriptional regulation of cardiovascular development requires precise spatiotemporal control of gene expression, and heterozygous mutations of transcription factors have frequently been implicated in human cardiovascular malformations. A novel mechanism involving posttranscriptional regulation by small, noncoding microRNAs (miRNAs) has emerged as a central regulator of many cardiogenic processes. We are beginning to understand the functions that miRNAs play during essential biological processes, such as cell proliferation, differentiation, apoptosis, stress response, and tumorigenesis. The identification of miRNAs expressed in specific cardiac and vascular cell types has led to the discovery of important regulatory roles for these small RNAs during cardiomyocyte differentiation, cell cycle, conduction, vessel formation, and during stages of cardiac hypertrophy in the adult. Here, we overview the recent findings on miRNA regulation in cardiovascular development and report the latest advances in understanding their function by unveiling their mRNA targets. Further analysis of miRNA function during cardiovascular development will allow us to determine the potential for novel miRNA-based therapeutic strategies.

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